KAPLAN GILMAN & PERGAMENT LLP

COUNSELORS AT LAW
1480 ROUTE 9 NORTH, SUITE 204, WOODBRIDGE, NEW JERSEY 07095
TELEPHONE (732) 636-4500, FACSIMILE (732) 636-4550
WWW.KGPLAW.COM

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TO:	**Examiner Susanna Moore**
COMPANY:	U.S. Patent and Trademark Office (Art Unit 1624)
FAX NO.:	(571) 273-9046
FROM:	Milagros A. Cepeda, Esq.

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OUR REF: 601-4	**DATE:** July 14, 2009

MESSAGE:

Applicant(s)	:	Yongfeng Wang
Title of Invention:	:	2-substituted phenyl-5, 7-dihydrocarbyl-3, 7-dihydropyrrolo [2, 3-d] pyrimidin-4-one…
Date Filed	:	March 27, 2006
Serial No.	:	10/559,516
Examiner	:	MOORE, Susanna
Art Unit	:	1624
Confirmation No.	:	3829

CERTIFICATE OF FAXING

I hereby certify that this correspondence is being faxed to facsimile number (571) 273-9046 to the attention of Examiner Susanna Moore on the date below.

Dated July 14, 2009 Signed /Paula M. Halsey Print Name Paula M. Halsey

Attorney Docket No. 601-4

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s)	:	Yongfeng Wang
Title of Invention	:	2-substituted phenyl-5, 7-dihydrocarbyl-3, 7-dihydropyrrolo [2, 3-d] pyrimidin-4-one derivatives, the preparation and the pharmaceutical use thereof
Date Filed	:	March 27, 2006
Serial No.	:	10/559,516
Examiner	:	MOORE, SUSANNA
Art Unit	:	1624
Confirmation No.	:	3829

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

RESPONSE AMENDMENT

SIR:

This is responsive to the Office Action dated April 15, 2009 in connection with the above-referenced patent application, a response to which is due by July 15, 2009.

The applicants have amended the application as follows:

Amendment to the Specification begin on page 2 of this paper

Amendment to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Remarks/Arguments begin on page 11 of this paper.

Please amend paragraphs 001, 002, 003 and 004 in the specification as follows:

[001] The present invention relates to 2-substituted phenyl-5,7-dihydrocarbyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one derivatives, the process for their preparation, the composition containing them, and the use for treatment and/or prevention of sexual dysfunction and other diseases related to ~~phospholipase~~ **phosphodiesterase** 5.

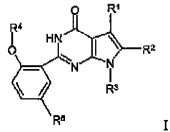
[002] Sildenafil, disclosed in WO9428902, is first kind of orally-administrated potent inhibitors of ~~phospholipase~~ **phosphodiesterase** 5 in treatment of the erectile dysfunction of man. By inhibiting the ~~phospholipase~~ **phosphodiesterase** 5 in corpus cavernosum-, it can achieve the purpose of relaxing smooth muscle in human corpus cavernosum, improving penile hyperemia so as to result in erection. The effective rates of sildenafil in treating male sexual organs erectile dysfunction amount to 80%.

[003] Also, Pfizer Ltd. has developed a series of 1,6-dihydropyrrol [4,3-d] pyrimidin-7-one derivatives, and broadened their therapeutic area where such indications was thought to be treated by inhibiting ~~phospholipase~~ **phosphodiesterase** 5. All of these compounds are disclosed in EP0951098, WO9849116, US6251904, and WO0024745, and the latter two of patents include the compounds whose substituted phenyl on C-5 is replaced by the substituted pyridin-2-yl. On the basis of the structure of Sildenafil, DONG A PHARMA Co. Ltd. of Korea developed a series of mono substituted derivatives in the nitrogen atom of sulfonylamino group, as disclosed in WO0027848 and WO0198304. Presently, as described in WO0216364, in order to further enhance water-solubility, LG Chem. Invest. Ltd. disclosed the derivatives of 1,6-dihydropyrrolo[4,3-d]-pyrimidin-7-one with polyethylene glycol. In addition, 1,5-dihydropyrrolo[3,4-d]pyrimidin-4-ones and 1,9-dihydropurin-6-ones were developed by Pfizer Ltd. for the treatment of sexual dysfunction(US6100270). WO0160825 disclosed 3,5-dihydropyrrolo[3,2-d]pyrimidin-4-ones are useful for the treatment of impotence. Recently, 3H-imidazo[5,1-f][1,2,4]triazin-4-ones was disclosed by Bayer Co. Ltd. in the patent application DE19881732.

[004] The object of the present invention is to provide compounds for treatment of sexual dysfunction and other diseases related to ~~phospholipase~~ **phosphodiesterase** 5.

Claims:

1. (currently amended) A compound of the formula I :



I

wherein R^1 is C_1-C_4 branched or straight chain alkyl;~~+~~

R^2 is H;

R^3 is H; C_1-C_6 branched or straight chain alkyl; C_2-C_4 alkenyl; or C_2-C_4 alkynyl;

R^4 is H; C_1-C_6 branched or straight chain alkyl; or C_2-C_4 alkenyl;

R^5 is $SO_2NR^{10}R^{11}$;~~+~~

R^8 is H; or C_1-C_6 branched or straight chain alkyl;

R^{10} and R^{11} are each independently H; ~~or~~ C_1-C_{12} branched or straight chain alkyl; C_1-C_3 halogenated branched or straight chain alkyl; C_2-C_6 alkenyl; C_2-C_6 alkynyl or C_3-C_6 cycloalkyl; or R^{10} and R^{11} together with their attached nitrogen atom form a pyrrolinyl, pyrrolinone group, piperidyl, morpholinyl, or 4-N(R^8)-piperazinyl; ~~which are optionally substituted with C_1-C_4 branched or straight chain alkyl, $NR^{14}R^{15}$ phenyl,~~ the said groups optionally substituted with OH, CN, CO_2R^8, C_1-C_4 branched or straight chain alkyl, or C_1-C_3 alkoxyl ~~or linked together with another substituted phenyl by a carbonyl group~~;

~~R^{14} and R^{15} are each independently H; C_1-C_4 branched or straight chain alkyl;~~

or their pharmaceutically acceptable salts.

2-3. (Cancelled)

4. (Previously amended) The compound according to claim 1, wherein the compound is selected from a group consisting of:

2-[2-ethoxyl-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-methoxyl-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, and the hydrochloride thereof;

2-[2-n-propoxy-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, and the hydrochloride thereof;

2-[2-allyloxy-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, and the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-n-propoxy-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-ethyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-methylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-methylpiperazinyl-1-sulfonyl)phenyl]-5-ethyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-ethoxycarbonylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[4-(2-hydroxyethyl)piperazinyl-1-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(pyrrolidinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[3-(2-oxy-pyrrolidin-1-yl)-n-propylamino-N-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d] pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[2-(pyrrolidin-1-yl)-ethylamino-N-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(morpholino-4-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[3-(morpholin-4-yl)-n-propylamino-N-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4- one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[2-(morpholin-4-yl)-ethylamino-N-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(2,6-dimethylmorpholino-N-sulfonyl)phenyl]-5-

methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(1-benzylpiperidyl-4-aminosulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[2-(piperidin-1-yl)ethylamino-1-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-benzylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo [2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-phenylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo [2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(piperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-benzo[1,3]dioxol—5-yl-methylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d] pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[4-(3-phenyl-n-propan-1-yl)piperidyl-1-sulfonyl] phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(n-propylamino-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one,the monohydrochloride, dihydrochloride and

other possible hydrochloride thereof;

2-{2-ethoxyl-5-[N,N-di(2-hydroxyethyl)aminosulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[N-(2-hydroxyethyl)-N-methylaminosulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[N-(2-hydroxyethyl)-N-ethylaminosulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[N-(2-hydroxyethyl)-N-n-butylaminosulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(p-ethoxylcarboxylphenylamino-N-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(o-benzoylphenylamino-N-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(N2-acethydrazido-N1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride and dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(2-dimethylaminoethylamino-N-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

optionally substituted with OH, CN, CO_2R^8, C_1-C_4 branched or straight chain alkyl, or C_1-C_3 alkoxyl.

11. (New) The compound according to claim 1, wherein R^1 is C_1-C_4 branched or straight chain alkyl; R^2 is H; R^3 is C_1-C_6 branched or straight chain alkyl; R^4 is C_1-C_6 branched or straight chain alkyl; R^5 is $SO_2NR^{10}R^{11}$; R^8 is H; C_1-C_6 branched or straight chain alkyl; and R^{10} and R^{11} are each independently H ; C_1-C_{12} branched or straight chain alkyl; C_1-C_3 halogenated branched or straight chain alkyl; C_2-C_6 alkenyl; C_2-C_6 alkynyl or C_3-C_6 cycloalkyl; or R^{10} and R^{11} taken together to form a pyrrolinyl, pyrrolinone group, piperidyl, morpholinyl, 4-N(R^8)-piperazinyl; the said groups optionally substituted with C_1-C_4 branched or straight chain alkyl; or their pharmaceutically acceptable salts.

12. (New) The compound according to claim 11 which is 2-[2-ethoxyl-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the mono-hydrochloride, dihydrochloride and other possible hydrochloride thereof.

Attorney Docket No. 601-4

REMARKS

Claims 1-4, 6-7, and 10 are pending. The specification was objected to because of informalities. Claim1 was objected to because of various informalities and Claims 1-4, 6-7, and 10 have been rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite.

By this Amendment, Applicants has amended claims 1 and 10 and added new claims 11 and 12. Support for amendments to claim 1 and 10 and new claims 11 and 12 may be found in the specification and claims as originally filed. No new matter has been added. Applicants respectfully request reconsideration and allowance of all pending claims in view of the remarks set forth below.

The specification was objected to because of informalities throughout the specification. Applicant has amended the specification to correct typographical error.

The Examiner made several objections to claim 1. Applicant believes that the informalities objected to have been corrected in Claim1.

The Examiner rejected claim 1 and dependent claims for alleged vagueness based on lack of antecedent basis and other informalities. As amended claim 1 clearly defines the variables and the species in claims 4 and the intermediates in claim 10 have clear antecedent basis from claim 1. Thus, the amendments to the claims obviated the rejection.

It is believed all claims are now in condition for allowance, which is respectfully solicited. The Examiner is authorized to deduct additional fees believed due from our Deposit Account No. 50-4771.

Respectfully submitted,

KAPLAN GILMAN & PERGAMENT LLP
1480 Route 9 North, Suite 204
Woodbridge, New Jersey 07095
Telephone (732) 636-4500

Dated: July 13, 2009

/Milagros A. Cepeda/
Milagros A. Cepeda
(Reg. No. 33,365)